DCT

Digital Component Technology

AMPEX

WELCOME TO THE CHANGING WORLD OF VIDEO.

You're about to experience what the last four decades of video technology have been leading up to. To discover tools that will give you the power to create video with unsurpassed clarity, crispness, and multigenerational integrity. To unleash a level of creative freedom and flexibility you may have never thought possible—much less attainable.

This is a new chapter in video history. This is DCT.™ Digital Component Technology from Ampex.

DCT: What It Is, What It Does, And Why It Should Matter To You.

Video recording technology was developed as an analog process with a composite signal system.

But the fact is, contemporary post-production requirements have outstripped the performance capabilities of analog composite environments.

Analog simply cannot meet today's demands for multiple generations. And analog signals are easily degraded by noise and distortion.

The composite signal system is also limited. And limiting. To be processed by a digital video effects system, composite signals must be decoded into components, manipulated, then re-encoded into composite form for further processing. And this can occur time after time, layer after layer, in a post-production session. And each time, artifacts degrade the signal.

And composite keying is visibly inferior.

But by remaining in a complete 4:2:2 environment, direct handling of digital video effects and layering is accomplished without cross-color and cross-luminance problems, without degradation of the signal-to-noise ratio, without loss of image quality.

Moreover, since DCT™ is all-digital, traditional analog-environment "tweaking" is eliminated.

All of which means that depending on your applications, DCT may well be the video technology you've always needed, but never thought you could have.

In The Beginning...Was Ampex.

1948: *Ampex introduces the first practical audio tape recorder.*

1956: *Ampex introduces the first practical videotape recorder ("Quad").**

1961: *Ampex introduces helical-scan recording, the technological breakthrough that leads to the consumer video revolution.*

1964: *Ampex introduces the first electronic video editor.*

1965: *Ampex introduces high-band color videotape recording.**

1967: *Ampex introduces instant replay, with stop-action, slow-motion, and color.*

1971: *Ampex introduces the ACR-25, the first automated cassette library system for the recording and playback of commercial spots.*

1977: *Ampex introduces Electronic Still Store.**

1978: *Ampex introduces 1" Type C recording.**

1978: *Ampex introduces AST,® Automatic Scan Tracking, bringing variable-speed effects to Type C machines.**

1981: *Ampex introduces the first 3-dimensional digital video effects system, ADO.®**

1985: *Ampex introduces Zeus,™ the advanced digital picture processor/time base corrector for analog environments.**

1986: *Ampex introduces the ACR-225, the first commercial spot player using composite digital technology.**

1988: *Ampex introduces the D-2 composite digital recording format.**

1992: *Ampex introduces DCT, Digital Component Technology, the next video revolution.*

**Awarded an Emmy for Technical Achievement by The National Academy of Television Arts and Sciences*

DCT: The System Is The Solution.

DCT from Ampex is a complete CCIR-601 digital component system.

It includes all the elements necessary to build as simple or as sophisticated a system as you need: tape drive, tape cartridge, production switcher, edit controller, ADO® digital effects system, and interconnect equipment.

All that's needed is your own creativity.

Because with DCT, you'll be able to create video with the power and impact attainable only in the digital component environment—and with unprecedented ease, simplicity, and speed.

You won't have to waste time trying to piece together a system from a variety of manufacturers, or deal with differing interfaces. With DCT from Ampex, your system will work together because it was designed together.

The key components of the DCT system have all been optimized to assure the highest quality video achievable.

The result: A level of precision integration available from no other manufacturer in the world.

The Ampex Five Steps to Digital.

Years ago, Ampex clearly recognized that while the future of video technology was digital, it was unclear how best to prepare for it. So we proposed a progression that takes advantage of existing investments and technology, while still taking positive steps toward digital component systems.

The first step was to identify an analog-to-digital "continuum," and recognize that some existing components—special effects, character generators, still stores—are already internally 4:2:2 and can be configured for CCIR-601 inputs and outputs.

The second step was to replace existing Type C analog VTRs with D-2, 4Fsc composite digital tape drives to achieve a noticeable improvement in picture quality along with CD-quality digital sound.

Step three was to add a low-cost 4Fsc digital layering device to existing analog composite switchers to achieve the all-digital layering necessary for image-intensive graphics and effects.

Step four was to add component-to-composite digital signal translators to create a bridge between graphics and post-production environments.

And step five is DCT—a complete, practical, digital component system available from one manufacturer.

THE SECRET OF DCT ENGINEERING: PRECISION MECHANICS.

The Innovation That Started It All.

On November 30, 1956, CBS Television City in Hollywood aired its "Douglas Edwards and the News" program to the West Coast—recorded three hours earlier on an Ampex video recorder.

This was the world's first coast-to-coast network television broadcast pre-recorded on videotape. And it marked one of the most significant turning points in modern technological history.

One of the keys to this revolution was a technique that Ampex engineers had devised just a year earlier. It was called FM video recording. And it's the foundation of all video recording to this day.

Earlier attempts to produce acceptable video signals on tape (also conducted by Ampex in the early 1950's) employed amplitude modulation (AM) techniques, just like those used in radio. But AM recording simply can't reproduce the extremely wide video bandwidth, 225 times that of the highest quality professional audio recorder.

Ampex, however, developed an ingeniously simple method for frequency modulating a carrier with the video signal, thereby avoiding the image-destroying noise produced by amplitude variations and, more importantly, reducing the bandwidth requirements from 18 octaves to 1 octave.

The result was the world's first practical videotape recorder. And the first of Ampex's 11 Emmy Awards for Technical Achievement, and numerous world-wide patents.

Videotape recording is a mechanical process.

The best electronics in the world are compromised without precision mechanics.

That's why we built upon the engineering reputation we established with Ampex's VPR®-3 and VPR-300 to give the DCT 700d tape drive the most advanced mechanical platform in the world.

And it has to be. Digital recording demands tight tolerances, and those tolerances must be maintained shuttle after shuttle, hour after hour, day after day.

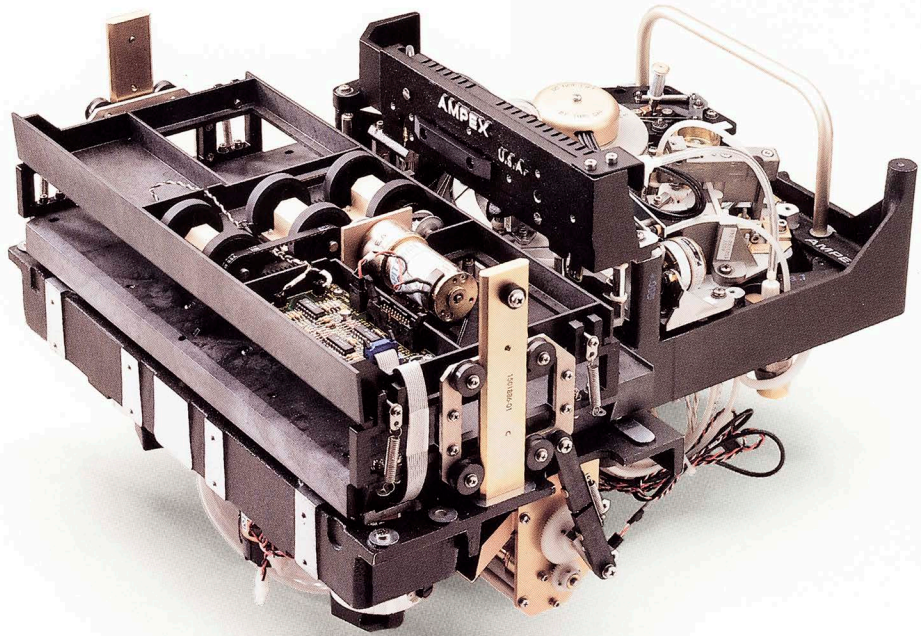
Yet for all this ruggedness, the drive must also handle ultra-thin tapes with unerring precision.

So we designed the DCT 700d with frictionless air-lubricated tape guides and eliminated the pinch roller used in less-sophisticated tape drives, resulting in the gentlest tape handling in the world. This allows the tape to be accelerated to full wind speed in less than one second.

And, because the drive employs both co-planar and helical threading, it can read timecode without the tape touching the video heads, reducing wear and tear on the tape, heads, and your valuable time.

This attention to precision engineering doesn't stop with the drive. The DCT 700t tape cartridge has been exactingly designed to meet the tight tolerances and demanding loads of the drive. The result is precise, dependable, repeatable performance.

And when it's your production on the line, your clients shouldn't accept anything less.



THE SECRET OF DCT ENGINEERING: PRECISION ELECTRONICS.

Videotape recording is an electronic process.

The most accurate drive mechanism in the world is compromised if the video signals aren't processed with absolute purity and integrity.

That's why the DCT 700d tape drive employs the most advanced electronics in the industry.

This, too, is an Ampex tradition. Our ADO® digital effects system revolutionized video over a decade ago as the first real-time 3-D special effects device, a breakthrough in electronics engineering.

Our Zeus™ advanced video processor revolutionized the industry again by bringing incredible transparency to analog recording with digital technology, and with bounceless variable-speed playback and editing.

And now our DCT electronics promise yet another revolution by incorporating advanced digital signal processing technologies we developed with ADO and Zeus. It also includes other techniques such as our proprietary spatial filtering and unique error-correction processes developed by our data recording engineers.

This marks the true merging of video and computer technologies from Ampex, always the leader in advanced technology for both industries.

In fact, our computer memory systems are installed at some of the world's most advanced supercomputing facilities, such as those at the National Center for Atmospheric Research.

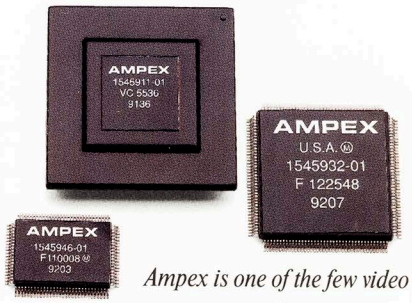
A lot of people are talking about the merging of video and computer technologies in the future, but Ampex does it today—with DCT.

Some Facts About ASICs.

ASICs—Application Specific Integrated Circuits—are complex integrated solid-state electronic devices. They are custom-designed for specialized functions, and operate faster, with less power, in a smaller space, and more reliably than older discrete components.

ASICs are one of today's most critical design technologies.

And the DCT 700d contains over 100 ASICs, all designed by Ampex engineers exclusively for this machine.



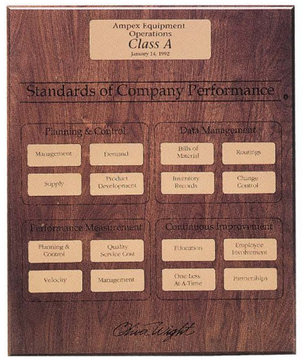
Ampex is one of the few video companies in the world that has its own ASIC design center. In fact, only a handful of semiconductor manufacturers have a facility this advanced. It is this kind of commitment to leading-edge technologies that sets DCT apart from all others.

DCT: The Revolution In Evolution.

Ampex on World Class Manufacturing.

In January of 1992, Ampex was chosen to receive the "World Class Manufacturing Excellence" Award by the Oliver Wight Companies, a highly respected consulting firm concerned with improving manufacturing quality.

The Ampex facility was noted for its excellence in just-in-time materials- and production-control techniques, for major advances in materials resource planning, and for overall attention to quality and consistency.



Other companies that have received this "Class A" award have included Boeing, General Dynamics, and Martin Marietta.

Leading-edge technologies, such as DCT, demand leading-edge manufacturing and quality-control systems. And that's just what our Colorado Springs facility delivers.

The history of video technology has been the history of compromise.

All video signals start out in components and end up on the screen as components, but it's always been more practical (technically and economically) to record and transmit them in one composite signal.

Until DCT.

With DCT the signals start and stay in component throughout the entire signal path. The DCT system is also available with a single-cable serial digital interconnection that vastly reduces the cost and complexity of older 25-wire parallel versions.

Moreover, DCT is based on a proven 19mm tape transport. This solution is capable of exceeding today's required performance levels. Its in-built development potential allows for the evolution to advanced or wide-screen TV systems without exceeding its design capacity.

DCT is a robust system that can accommodate future technologies without strain. Which means the history of compromise is over.

DCT: The Ultimate Business Decision.

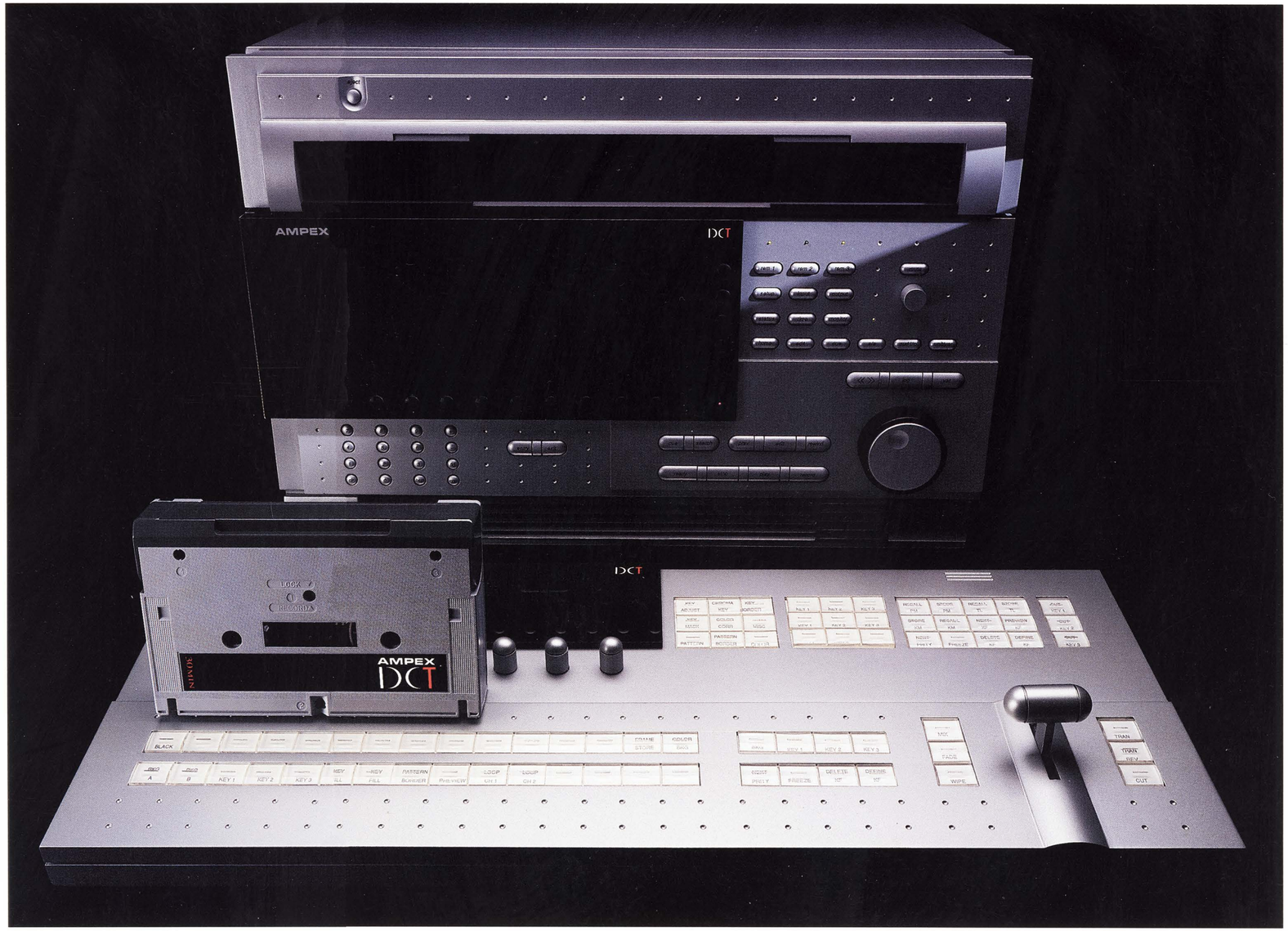
Any post-production system is not just a purchase, it's a commitment.

Your decision can set the stage for future expansion and innovation, or can limit options to a few compromise solutions.

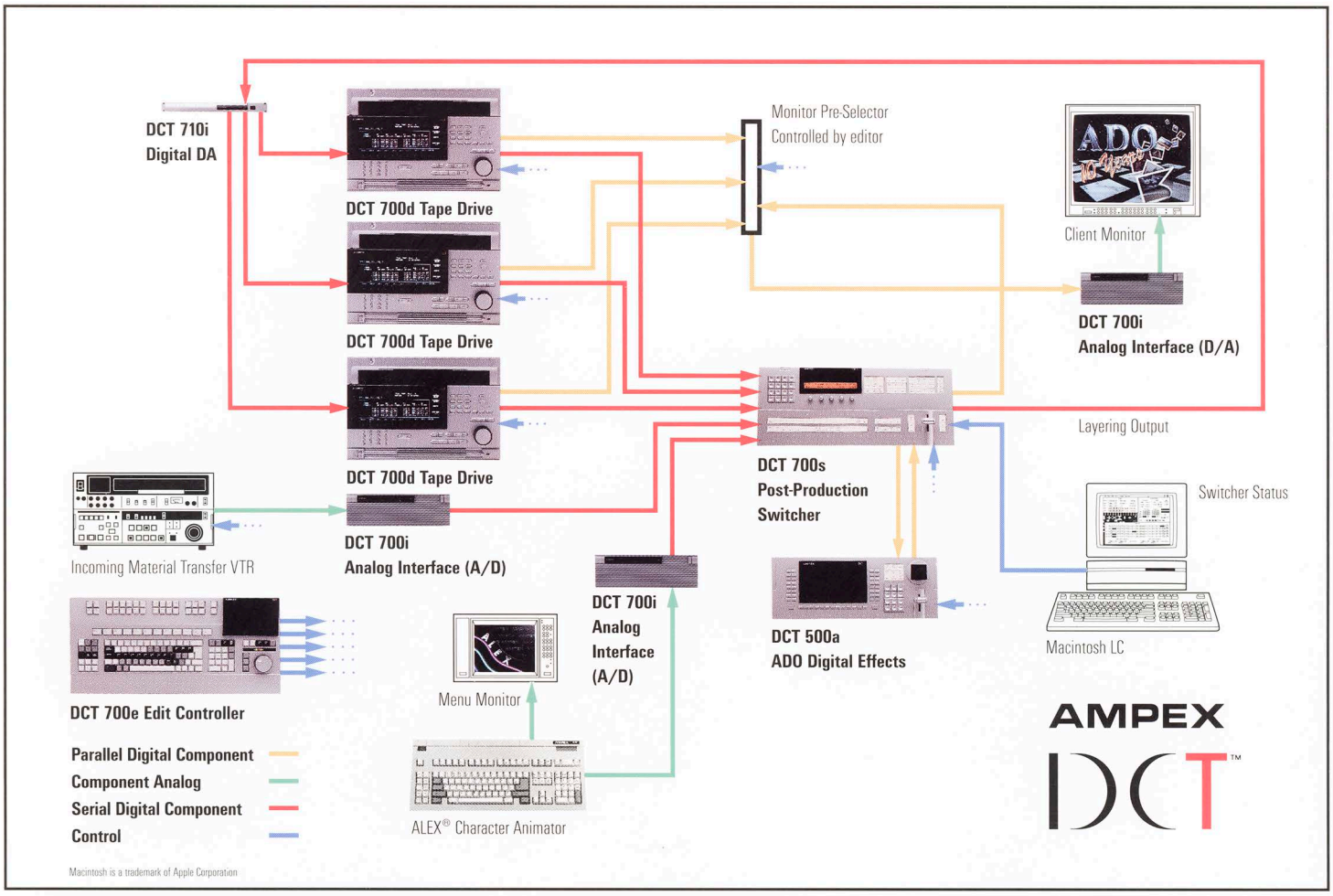
But DCT provides unprecedented flexibility in high quality, advanced post production. Which means an unprecedented competitive advantage.

In an era of increased competition—for quality, service, and customer loyalty—DCT can maintain that competitive advantage even as video technology continues to evolve.

The future is clearly digital component. And that future is here today—with DCT.



DCT System Diagram.



DCT was conceived and designed as a system, the key components all optimized to each other for seamless, flawless performance.

We also recognize, however, that no matter how compelling the digital component environment offered by DCT might be, signals may still have to come from and return to the analog environment in many post-production facilities.

That's why Ampex has also designed and developed the interconnect system to ensure that your DCT system will deliver its full power and flexibility.

AMPEX PRODUCTS.

In addition to DCT, Ampex has introduced Data Storage Technology, DST.™ Based on the same robust 19mm tape drive used in DCT, the DST system allows high performance computing and high capacity data storage, back up, and archiving applications to deliver their full performance potential with levels of throughput (data transfer rates) and capacity unprecedented in the industry.

DCT and DST are just two examples of Ampex's world leadership in the recording, storing, and retrieving of information and images for the television, data, and instrumentation markets.

DATA RECORDING AND INSTRUMENTATION EQUIPMENT

DST™ Data Storage Products
- DST 800 Series Automated Cartridge Library
- DST 600 Series Tape Drive
- DST 600 Series Tape Cartridge (25, 75, 165 GB)

Instrumentation
- DCRSi™ Digital Cassette Recording System (The world's leading compact, rugged, high bit rate data recorder available in both airborne and laboratory versions)
- ID-2 Recording System (A high speed helical-scan data recorder)

TELEVISION, BROADCAST, AND POST-PRODUCTION EQUIPMENT

Video Recorders
- VPR®-300 Series D-2 VTRs
- VPR-200 Series D-2 VTRs
- VPR-6 Type C Studio Recorder
- Betacam SP Studio and Portable VTRs
- Betacam SP Cameras and Camera-Recorder Systems
- Zeus™ Advanced Video Processor

Automated Recorders
- ACR™-225 Automated Cassette Recorder/Player

Graphics Systems
- ALEX™ Character Animator

Special Effects
- ADO® Digital Video Effects Systems

Switchers
- Century™ Series Production Switchers
- Vista™ Compact Production Switchers
- ADAPT™ Composite Digital Layering Device

ACE® Editors
- ACE 25 Computerized Edit Controller

RECORDING MEDIA

Videotape
- 398 Betacam SP
- 208 Betacam
- 329 D-2 Digital 19mm
- 229 D-1 Digital 19mm
- 297 U-matic SP
- 197 U-matic
- 296 1″ Type C Editing Series
- 196 1″ Type C

Audio Tape
- 456 Grand Master®
- 499 Grand Master Gold™
- 467 Digital Mastering

Instrumentation
- 705 Logging
- 733 DCRSi Cassettes
- 731 DCRSi Cassettes
- 721 High Energy PCM
- 799 Standard Energy PCM
- 797 Wideband
- 767 Intermediate Band

WELCOME TO THE CHANGING WORLD OF VIDEO.

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